pewag

WORLD'S STRONGEST CHAIN
www.pewag.com

pewag winner inox stainless steel chain system G5

Ideas and solutions in stainless steel

E

Content

pewag winner inox stainless steel chain system G5

pewag offers in fields of high grade stainless steel lifting gear a universal program of innovative quality products, service and solutions.

pewag, a long-established, global enterprise, combines centuries of experience in chain production, know-how in the stainless steel production with state-of-the-art production technology to meet the demands of the market, as well as end-users.

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pewag group

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Technical changes and misprints are subject to alteration.

Welcome to the pewag group

We are an internationally operating group of companies. Our track record goes back to the year 1479.

Determination to innovate pewag group‘s Mission Statement expresses the goals of our actions:

Driven by our determination to innovate, we at pewag manufacture the world’s best chains today and in the future. The high quality of our products and services as well as the passionate commitment of our employees guarantee safety for moving people and goods. Our customers set the benchmark for our achievements.

Principles of pewag group

Brands
The values of our premium brands are demonstrated by our first class quality and innovations and are communicated consistently and coherently. We anticipate market demands and changes in the environment and adapt our strategies, organization and actions accordingly.

Due diligence
In all our processes we use due diligent business practices and efficiency and strive to improve these continuously. In the long run, high profits secure the future of the organization and the growth of the corporate group.

Technological leadership
We secure our technological leadership through highest product quality, constant improvements and innovations of products, as well as manufacturing processes. We commit ourselves to careful treatment of the environment by reducing the use of energy and raw materials, ensuring the longevity of our products and making them recyclable.

People within our group
We value open, honest and team-oriented work-style, which is based on transparent communication. The ideas, opinions and experience of our employees are valuable inputs for our decision making process. We strive for stable and fair partnerships with our customers, suppliers and other business partners. Social aspects are considered when making business decisions.

We are a modern group of companies which looks back to a tradition and experience of more than 500 years. Since our founding years, a lot has changed, but the values that made our success possible from the beginning remain.

pewag group –
Innovation. Quality. Partnership.

Customer proximity

International presence

After a changing history pewag has established itself today as one of the world's leading chain manufacturers with 22 sales locations and 6 production sites on two continents - Europe and North America.

pewag as an international corporate group is supported by a strong and professional partner network. This cooperation allows for optimized customer service and support.

Production and sales locations

Europe	
Austria	pewag austria GmbH, Graz pewag austria GmbH, Kapfenberg pewag Schneeketten GmbH & Co KG, Graz pewag Schneeketten GmbH & Co KG, Brückl pewag engineering, Kapfenberg AMW Grünberger Handelsgesellschaft mbH, Wien
Germany	pewag Deutschland GmbH, Unna pewag Schneeketten Deutschland GmbH, Unna
France	J3C S.A.S. pewag France, Seyssins Chaineries Limousines S.A.S., Bellac
Italy	pewag italia s.r.l., Andrian
Netherlands	pewag nederland B.V., Hillegom APEX International BV, Hillegom

Europe	
Poland	pewag polska Sp. z o.o., Buczkowice
Russia	OOO „pewag", Moscow
Sweden	pewag sweden AB, Emmaboda
Slovakia	pewag slovakia s.r.o., Kršany
Czech Republic	Řetězárna Česká Třebová s.r.o., Česká Třebová pewag s.r.o, Vamberk
Ukraine	TOV „pewag Ukraine", Lviv

North America	
USA	pewag Inc., Bolingbrook, Illinois pewag Inc., Rocklin, California

pewag group presents itself on the internet. More ...

www.pewag-group.com
www.pewag.com

History of the pewag group

Advantage through tradition

The history of pewag group goes back to the 15th century and therefore makes us the oldest chain manufacturer worldwide. With our experience we are ready for the future.

Timetable of important events

1479 First documented references of a forging plant in Brückl
1787 Foundation of a chain forgery in Kapfenberg
1803 Foundation of a chain forgery in Graz
1836 Establishment of an iron casting plant in Brückl
1912 Production of the First Snow Chain worldwide
1923 Merger of plants in Graz and Kapfenberg – Creation of the name "pewag"
1972 Foundation of a sales company in Germany
1975 Foundation of a sales company in the USA
1993 Foundation of pewag austria GmbH
1994 Foundation of the first subsidiary in Czech Repbulic
1999 Acquisition of the Weissenfels Group
2003 Separation from the Weissenfels Group
2005 Reorganization into 2 groups:
Schneeketten Beteiligungs AG Group – Snow Chains
pewag austria GmbH Group – Technical Chains
2009 Acquisition of Chaineries Limousines S.A.S.

Lithography forging plant Brückl 1855

Anchor chain forgery 1878

Chain forgers 1956

Quality management

Our ultimate goal is to achieve customer satisfaction

To reach this goal, the quality management of the pewag group is determined by the principle: "We supply our customers with high-quality products which fully meet technological standards and its usage requirements," this is summarized in the four following mandatory principles:

Market oriented quality
To maintain and improve its competitive position, the quality of products and services of the pewag group must meet both the specifications of our customers and the standards one can expect from the technological leader in the industry.

Economic quality
As a profit-oriented company the quality is also determined by the material used, labor costs and financial possibilities, i.e. also within the framework awarded by the customer.

Responsibility for Quality
Quality management is the task and obligation of executives at all levels. Every employee of the pewag group has to be integrated by management in the preparations, execution and evaluation of the quality management measures.

Every employee takes the responsibility for the quality of his work.

Process oriented quality assurance
The close interaction between sales, product development, production and customer service is regulated within the individual companies by fixed processes and activities, as well as responsibilities with the aim to reach and maintain the defined quality standards.

Business areas

Working with pewag products

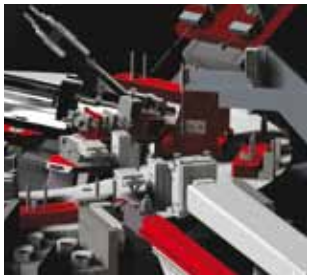
The pewag group has a substantial and diverse spectrum of products and services.

Our range of products varies from traction chains for tires (snow chains for passenger cars, trucks and special-purpose vehicles, tire protection chains for mining vehicles) over different industrial chains to products for the do-it-yourself sector (light chains, belts, etc.)

Segment A
Snow and forestry chains

Segment B
Hoist and conveyor chains

Segment C
Do-it-yourself



Segment D
Engineering

Segment F
Lifting and lashing chains and accessories

Segment G
Tire protection chains

Environment – we take responsibility

Ecological awareness in all areas

We continuously strive to keep the influence of our business on the environment as low as possible. Our production and warehousing is organized so that all legal requirements on environmental protection are fulfilled. Furthermore, we consider ecological aspects for our product development, processes and distribution channels and include these in our business planning.

Consequently, we are permanently striving for a continuous improvement and development of our established products to reach higher load capacities and safety for our customers with lighter weights and longer life spans.

Wherever we cannot avoid an environmental impact, we strive to reduce the use of energy, environmentally harmful emissions and keep the production of waste to a minimum. When investing in new machines we consider the technically most adequate and economically feasible state-of-the-art designs for their designated area of use.

Our environmental management is certified according to ISO 14001:2004. Regular internal audits assist to supervise compliance, test the effectiveness of our set standards and serve as a basis to determine improvement potentials.

Out of this long-lasting tradition we take responsibility for our products, employees, our sites and the environment very seriously.

We commit to comply with all environment-related regulations and continually improve our performance for the environment by defined goals. For that purpose we use modern production technologies. We enhance the ecological awareness of our employees by regular trainings.

We engage with our customers, neighbors and government agencies in an open communication and inform them about our environmental management wherever appropriate.

By providing advice, we want to inform our customers about the environmental aspects related to the use of our products – especially their long life spans. We are striving to motivate our customers and suppliers to consider environmental protection in their sphere of influence and use the same environmental standards as we do.

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Assembled systems

Features and Benefits

Unbeatable success with the variable pewag winner inox system

With pewag winner inox stainless steel chains and components, pewag provides an exchangeable basic lifting program, which is practicable, far-ranging and can be used in many applications. Moreover qualified people can assemble components in field.

The multitude of individual parts of all suppliers on the same quality, grade and tolerance level, can be selected, combined and applied by the user. There is no dependence on one manufacturer and single components can be replaced by products of other suppliers.

Based on the above-named conditions, foreign programs can be combined with pewag winner inox and the problem-solving abilities of the CWI Connex connector can be fully utilized. In that process pewag winner inox components are used in varying operational areas, like lifting, moving, locking and connecting.

Connex links can be used in combination with stainless steel wire rope, eye hooks and master links. In contrast to conventional lifting slings, pewag winner inox can be used in dissimilar corrosive mediums, as well as at elevated temperatures, in certain circumstances, even up to maximum + 700 ° C.

Production of chains and components is based on high class materials 1.4571 (AISI 316Ti) and 1.4404 (AISI316L), in which proportion of carbon is limited.

pewag´s quality management (ISO 9001) and continuous controlled production process under the correct practices, assures an upper limit of safety and economic life-time.

According to the requirements of the users and the market, pewag winner inox program will be enhanced and adjusted to their need.

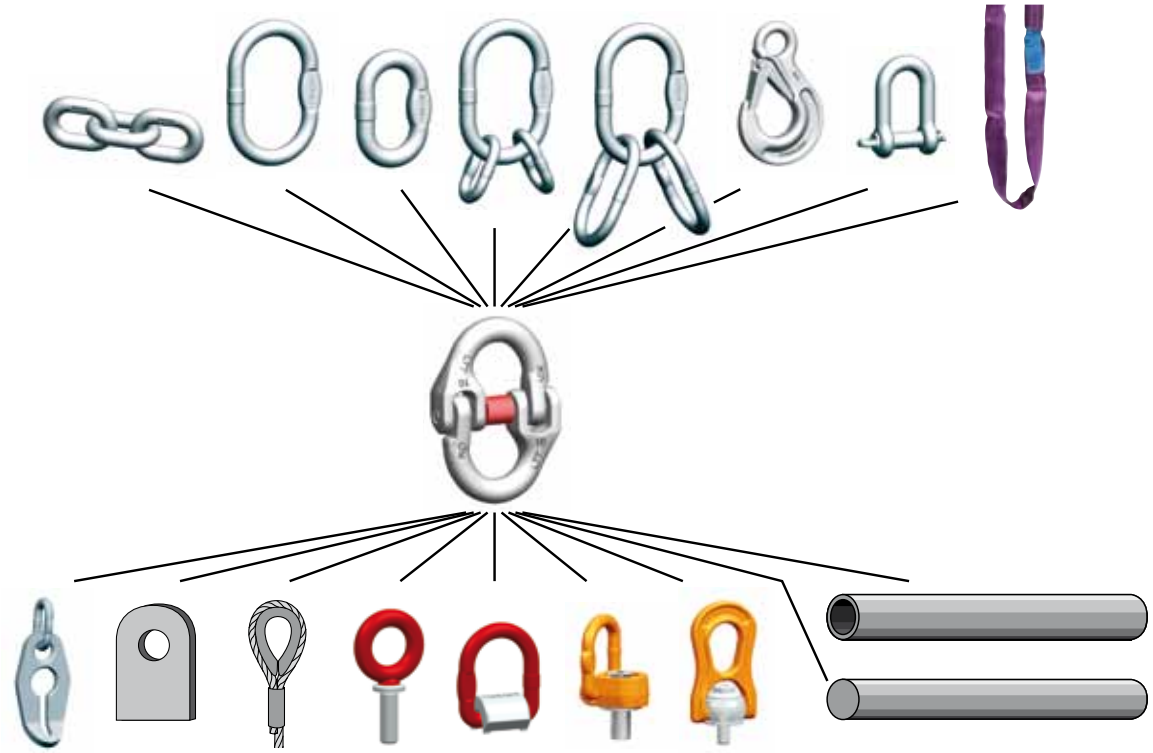
Summarized, pewag winner inox offers a well-founded and flexible solution.

pewag winner inox

CWI, Connex connecting link, the „link“ between chain, components and all other sling components

The benefits of Connex, vs. other kinds of connectors, are obvious:

- for connecting there are no special conditions like flattening sections necessary
- all the other lifting accessories, like hooks, master links, shortenings etc., don´t have to fulfill extra requirements for combination
- Connex links, can be mounted into eyes and openings or over shafts or tubes
- additional assembling, back fitting or dismantling is no problem
- with Connex, fasteners in the field of “fall protection equipment’s” can be connected very easily
- due to the huge radiuses, Connex accommodates much space for interlinking in several scopes, also outside of the sling domain
- the possible combinations of Connex are set few limits



Stainless steel lifting chains and accessories in G5 quality

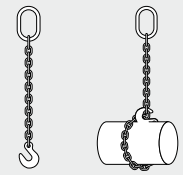
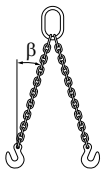
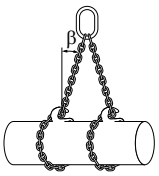
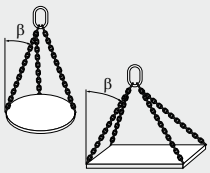
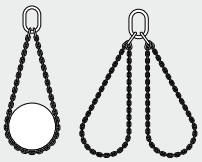
Data
Stress at load capacity limit: 125 N/mm2
Breaking stress: 500 N/mm2
Breaking elongation: min. 25 %

Material
1.4571 (AISI 316 Ti) und 1.4404 (AISI 316 L)

Surface
Chain: bright polished
Components: pickled and blasted

Load capacities

The load capacities listed are maximum values of the various sling types, stated according to the standard (uniform load) method of rating.

Safety factor 4		I-leg chains		II- leg chains				III- + IV-leg chains		Endless chain sling	Loop chains	
												
Angle of inclination		-	-	up to 45°	45°–60°	up to 45°	45°–60°	up to 45°	45°–60°	-	up to 45°	up to 45°
Load factor		1	0,8	1,4	1	1,12	0,8	2,1	1,5	1,6	1,4	2,1
Code	**d**	**load capacity [kg]**										
WOX 4	4	320	256	450	320	355	256	670	475	512	450	670
WOX 5	5	500	400	700	500	560	400	1.050	750	800	700	1.050
WOX 6	6	750	600	1.000	750	800	600	1.600	1.120	1.200	1.000	1.600
WOX 7	7	1.000	800	1.400	1.000	1.120	800	2.100	1.500	1.600	1.400	2.100
WOX 8	8	1.250	1.000	1.700	1.250	1.400	1.000	2.650	1.800	2.000	1.700	2.650
WOX 10	10	2.000	1.600	2.800	2.000	2.240	1.600	4.250	3.000	3.200	2.800	4.250
WOX 13	13	3.200	2.560	4.500	3.200	3.550	2.560	6.700	4.750	5.120	4.500	6.700
WOX 16*	16	4.500	3.600	6.300	4.500	5.040	3.600	9.450	6.750	8.000	7.100	10.000
WOX 16**	18	5.000	4.000	7.100	5.000	5.600	4.000	10.000	7.500	8.000	7.100	10.000

* At use with eye sling hook HSWI 16 up to batch code F
** At use with eye sling hook HSWI 16 up to batch code G onwards, respectively slings withour eye sling hook

Reduction Factors

If the chain slings are used in severe conditions (e.g. high temperature, asymmetric load distribution, edge load, impact/ shock loads) the maximum load capacity values in the table must be reduced by the load factors below. Please also note the user information on this topic.

If chains are looped around a beam or other round shaped loads the diameter should be minimum 3 times the chain pitch. For smaller diameters the WLL of the chains must be reduced by 50%.

When combining with other systems using alternate materials, example Duplex, 1.4462 (AISI 318LN), other limitations may result such as reduction of the maximum temperation to 350°C, or the material ca be magnetized easier. These factors must be considered when combining with other system.

For high temperature applications we recommend the welded system.

Temperature	-40°C – 400°C	400°C – 600°C	600°C – 700°C
Load factor	1	0,75	0,5
Asymmetric load distribution	The WLL has to be reduced by at least 1 leg. In case of doubt only consider 1 leg as load-bearing.		
Edge load	R = larger than 2x chain-Ø	R = larger than chain-Ø	R = chain-Ø or smaller
Load factor	1	0,7	0,5
Shock	slight shocks	medium shocks	strong shocks
Load factor	1	0,7	not permissible

WOX Chain

Stainless steel lifting chain, electrically welded and stamped, guaranteed compatible with Connex CWI connectors.
Similar DIN 5687-1. 100% tested.

WOX Chain	Code	Nominal diameter dn [mm]	Standard delivery length [m]	Pitch t [mm]	Inside width b1 min. [mm]	Outside width b2 max. [mm]	WLL [kg]	Breaking force [kN]	Weight [kg/m]
	WOX 4	4	50	16	6,0	15,0	320	12,6	0,34
	WOX 5	5	50	16	7,5	18,5	500	20	0,56
	WOX 6	6	50	18	8,7	21,6	750	30	0,83
	WOX 7	7	50	21	9,5	25,2	1.000	40	1,10
	WOX 8	8	50	24	11,7	27,7	1.250	50	1,46
	WOX 10	10	50	30	13,5	36,0	2.000	80	2,20
	WOX 13	13	25	39	17,5	46,8	3.200	125	3,80
	WOX 16	16	25	48	21,5	57,6	5.000	200	5,70

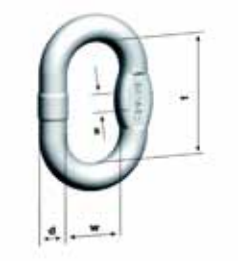
AWI Master link

Suitable for chains (sim.DIN 5688-1) and wire rope slings (sim. DIN 3088-1989): stainless steel master link, electrically welded, stamped, for I- and II- legged chain and wire rope slings, component for enlarged master link assemblies VWI, VAWI, also useable as endlink.
Similar DIN 5688-1. 100% tested

AWI Master link	Code	WLL 0–45° [kg]	Usable up to sling hooks following DIN 15401 No.	d [mm]	t [mm]	w [mm]	s [mm]	Weight [kg/pc.]	for I-leg chain slings	for II-leg chain slings
	AWI 8	450	0,5	8	60	35	-	0,08	4	4
	AWI 10	700	1,6	10	80	50	10	0,14	5	5
	AWI 13	1.050	2,5	13	110	60	10	0,34	6+7	6
	AWI 16	1.400	2,5	17	110	60	14	0,53	8	7
	AWI 18	2.000	5	19	135	75	14	0,92	10	8
	AWI 22	3.200	6	23	160	90	17	1,60	13	10
	AWI 26	5.000	8	27	180	100	20	2,46	16	13
	AWI 32	7.100	10	33	200	110	26	4,14	-	16
	AWI 36	10.500	16	36	260	140	29	6,22	-	-
	Custom-made, also with flattening section available									

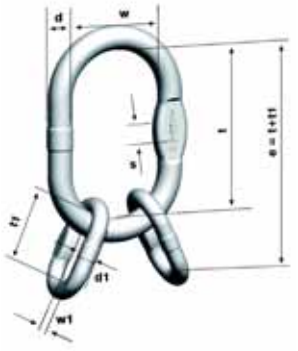
BWI Transition link

Stainless steel transition- and securing link, electrically welded, stamped, component of welded slings and by agreement useable as special link. Similar DIN 5688-1. 100% tested.

BWI Transition link	Code	WLL 0–45° [kg]	d [mm]	t [mm]	w [mm]	s [mm]	Weight [kg/pc.]	for I-leg chain slings	for II-leg chain slings
	BWI 5	320	5	26	13	-	0,01	4	4
	BWI 7	750	7	36	16	-	0,03	5+6	5+6
	BWI 9	1.000	9	44	20	-	0,07	7	7
	BWI 10	1.250	10	44	20	-	0,09	8	8
	BWI 13	2.000	13	54	25	10	0,17	10	10
	BWI 16	3.200	17	70	34	14	0,36	13	13
	BWI 20	5.000	20	85	40	-	0,68	16	16
	BWI 22	6.400	23	115	50	17	1,16	-	-
	BWI 26	10.000	27	140	65	20	1,92	-	-
	Custom-made, also with flattening section available								

VWI Enlarged master link assembly

Stainless steel enlarged master link assembly, electrically welded and stamped for III- and IV- legged chain slings. Similar DIN 5688-1. 100% tested.

VWI Enlarged master link assembly	Code	Consisting of	Usable up to sling hooks following DIN 15401 No.	WLL 0–45° [kg]	e [mm]	d [mm]	t [mm]	w [mm]	d1 [mm]	t1 [mm]	w1 [mm]	Weight [kg/Stk.]
	VWI 4	AWI 10 + 2 BWI 9	1,6	700	124	10	80	50	9	44	20	0,28
	VWI 5	AWI 13 + 2 BWI 10	2,5	1.050	154	13	110	60	10	44	20	0,52
	VWI 6	AWI 18 + 2 BWI 13	5	2.000	189	19	135	75	13	54	25	1,26
	VWI 7/8	AWI 22 + 2 BWI 16	6	3.200	230	23	160	90	17	70	34	2,32
	VWI 10	AWI 26 + 2 BWI 20	8	5.000	265	27	180	100	20	85	40	3,82
	VWI 13	AWI 32 + 2 BWI 22	10	7.100	315	33	200	110	23	115	50	6,46
	VWI 16	AWI 36 + 2 BWI 26	16	10.500	400	36	260	140	27	140	65	10,06
	Custom-made, also with flattening section available											

Number close to code constitutes chain, used in combination with product.

VAWI Enlarged master link assembly for wire ropes

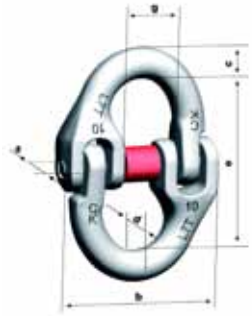
Stainless steel enlarged master link assembly for wire rope- and chain slings, in case of shortening should be assembled into transition links, electrically welded, stamped, for producing III – and IV – legged wire rope slings with enlarged transition links, which offer enough inner width to fit even two ropes. Similar DIN 3088-1989 respectively DIN 5688-1. 100% tested.

VAWI Enlarged master link assembly for wire ropes	Code	Consisting of	Usable up to sling hooks following DIN 15401 No.	WLL 0–45° [kg]	e [mm]	d [mm]	t [mm]	w [mm]	d1 [mm]	t1 [mm]	w1 [mm]	Weight [kg/pc.]
	VAWI 6	AWI 18 + 2 AWI 13	2,5	1.600	245	19	135	75	13	110	60	1,60
	VAWI 7	AWI 18 + 2 AWI 16	5	2.100	245	19	135	75	17	110	60	1,98
	VAWI 8	AWI 22 + 2 AWI 18	6	3.000	295	23	160	90	19	135	75	3,44
	VAWI 10	AWI 26 + 2 AWI 22	8	4.800	340	27	180	100	23	160	90	5,66
	VAWI 13	AWI 32 + 2 AWI 26	10	7.100	380	33	200	110	27	180	100	9,06
	VAWI 16	AWI 36 + 2 AWI 32	16	10.500	460	36	260	140	33	200	110	14,50

Number close to code constitutes chain, used in combination with product and attribution of ropes under construction of WLL in accordance of relevant rules of rope slings

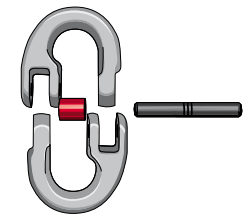
CWI Connex connecting link

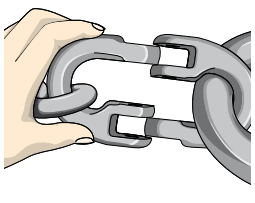
Stainless steel connecting link, drop-forged, stamped, divisible, for universal assembly of chain slings, master links, enlarged master link assemblies, shortening, shackles and other accessories, guaranteed compatible with all pewag winner inox components of same nominal size. Suspension bolt is locked by stainless steel spiral pull spring (mat. 1.4571), within enlarged synthetic sleeve as practically mounting aid. Serviceable up to max. 400 ° C. Similar EN 1677-1

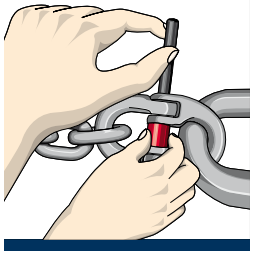


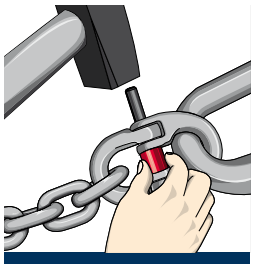
CWI Connex connecting link	Code	WLL 0–45° [kg]	e [mm]	c [mm]	s [mm]	d [mm]	b [mm]	g [mm]	Weight [kg/pc.]
	CWI 5	500	36	7	10	7	34	13	0,05
	CWI 7	1.000	54	9	13	9	51	17	0,12
	CWI 10	2.000	73	13	18	13	70	25	0,33
	CWI 13	3.200	92	17	23	17	86	29	0,70
	CWI 16	5.000	104	21	28	21	105	37	1,22

Number close to code constitutes chain, used in combination with product.









HSWI Eye sling hook

Stainless steel eye sling hook, drop-forged, stamped, for universal assembly of chain with lifting means via Connex link, for welding or use with stainless steel wire rope slings. The compact designed model of the hook guarantees highest load with a minimum-weight, impact protection for safety latch and bolt, as well as large hook mouth realised by special designed latch. The safety latch with a strong spring, riveted on both sides, provides superior directional stability.

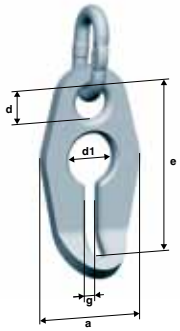
HSWI Eye sling hook	Code	WLL 0–45° [kg]	e [mm]	h [mm]	a [mm]	d1 [mm]	d2 [mm]	g1 [mm]	b [mm]	Weight [kg/pc.]
	HSWI 5	500	80	20	14	21	8	22	66	0,25
	HSWI 7	1.000	104	28	19	24	11	29	90	0,60
	HSWI 10	2.000	125	33	29	31	14	33	108	1,20
	HSWI 13	3.200	155	43	34	39	17	43	134	2,10
	HSK 16	4.500	175	47	37	47	22	48	153	3,00
	HSWI 16*	5.000	175	50	41	46	23	48	154	3,50

Number close to code constitutes chain, accessories in combination with product.

* At use with eye sling hook HSWI 16 from batch code G onwards. 1. letter of three-digit batch code.

VLWI Shortener

Stainless steel shortener for shortening of stainless steel chains, extremely convenient in application, in assembled system or for retrofitting.

VLWI Shortening	Code	WLL 0–45° [kg]	e [mm]	a [mm]	d [mm]	d1 [mm]	g [mm]	Weight [kg/pc.]
	VLWI 5/6	750	82	44	18	26	8	0,15
	VLWI 7/8	1250	111	68	22	34	11	0,40
	VLWI 10	2000	119	80	30	40	12	0,65
	VLWI 13	3200	150	92	34	52	16	1,20
	VLWI 16	5000	185	114	40	64	20	2,30

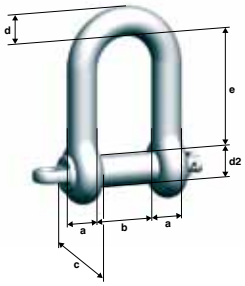
Number close to code constitutes chain, accessories in combination with product.

correct application

wrong application

SMSWI Safety shackle

Stainless steel safety shackle, drop-forged, stamped, tested, with added suspension bolt and splint pin useable as end fitting in chain- and wire rope slings and pump chains for lifting of submersible pumps and breathers, with maximum safety, also under vibration.
(not directly mountable onto chain)

SMSWI Safety shackle	Code	WLL 0–45° [kg]	e [mm]	a [mm]	b [mm]	d [mm]	d2 [mm]	c [mm]	Weight [kg/pc.]
	SMSWI 4/5	500	22	8	17	8	9	18	0,07
	SMSWI 6/7/8	1.250	40	12	25	12	13	25	0,22
	SMSWI 10	2.000	60	16	32	16	17	32	0,52
	SMSWI 13	3.200	50	13	25	13	16	32	0,35
	SMSWI 16	5.000	64	16	32	16	19	38	0,55

Other sizes and special models available on request!

CBHWI Connex bolt and safety set

Stainless steel safety-set matching to Connex connector, consisting of suspension bolt and pull-spring (Mat. 1.4571), within enlarged synthetic sleeve as practically fit-up aid, at which the pull spring guarantees locking of suspension bolt.

CBHWI Connex bolt and safety set	Code	for connecting link
	CBHWI 5	CWI 5
	CBHWI 7	CWI 7
	CBHWI 10	CWI 10
	CBHWI 13	CWI 13
	CBHWI 16	CWI 16

SFGWI Safety latch

Stainless steel safety latch set with extra strong spring and rivetable safety pin

SFGWI Safety latch	Code	for hook
	SFGWI 5	HSWI 5
	SFGWI 7	HSWI 7
	SFGWI 10	HSWI 10
	SFGWI 13	HSWI 13
	SFGWI 16	HSWI 16

IDWOX Identification tag

Stainless steel identifications tag, consisting of tag TKWI and mounting link MGWI, which can be assembled onto Connex

IDWOX Identification tag	Code
	IDWOX lifting

MGWI

Stainless steel mounting link MGWI, not welded, usable to connect the identification tag.

MGWI Mounting link	Code
	MGWI

TKWI

Stainless steel identification tag for one- and multi legged chain slings without mounting link MGWI

TKWI Identification tag	Code
	TKWI

Content 20

Welded system

Key benefits of welded system 22
Pump chains 23
Chain slings and endless chains 24-25

Welded system

Features and Benefits

Welded chain slings in stainless steel for specific applications

The power of impact of a producer depends amongst others on his ability to adjust himself to the requirements of the market and the need of the users.

pewag, a chain producer for more than 500 years, belongs to the chain factories of paramount know how and expert knowledge worldwide.

If round link – or square profile chains and oval links will be flash-butt welded correctly, no foreign material is included. The wire will be welded just by electric energy and mechanical upset force and a homogenized unit will be generated.

Welding locations are fully penetration welded by 100 %, so there is no hollow space and no cracks, in which for example water, chemicals or residue can accumulate.

Chains in welded system are used for example in hygienic applications, because of the clean surface of all components, chain, master and joining links. Persistent, profound pollution will remain minimal and chains can be cleaned easily.

If chain slings are used in applications with vibration, the welded system offers highest security and longest duration of life.

Welded chain constructions are used amongst others in:

- water-, wastewater and pump industry
- chemical – and oil industry
- clean technology and regenerative energy
- food-, slaughterhouse, hygienic and fishing industry
- powerplant and facilities (also in areas of higher temperatures)
- surface treatment
- marine and military
- recreational and sport area

chain stamping

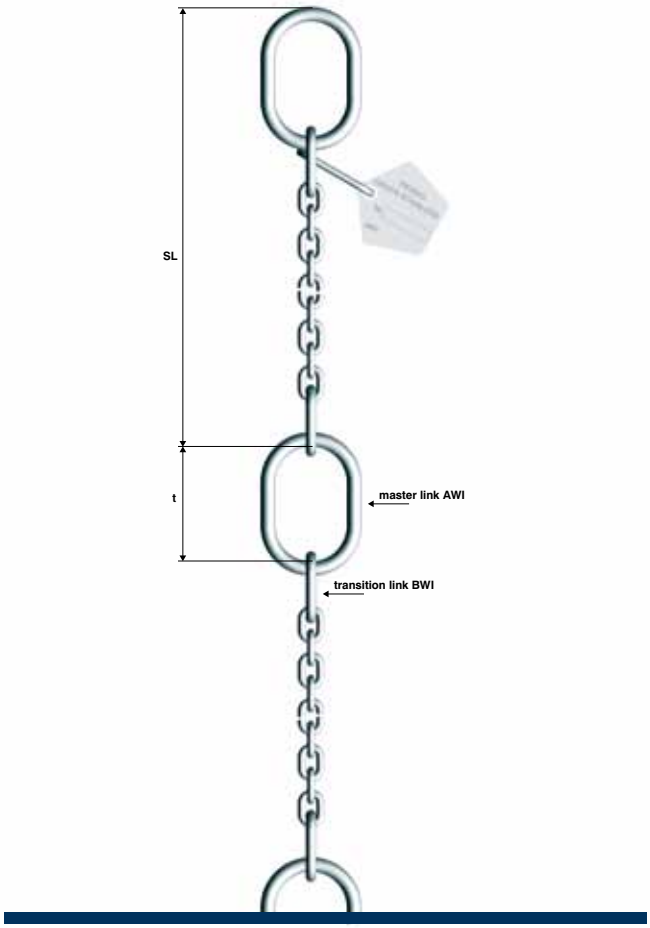
PCWI Stainless steel pump chain

pewag pump chains type PCWI in welded systems are, because of their construction and range of components, suitable for submersible pumps and breathers in the water and waste water area. Every chain sling is tested and serialized with identification tag and a test certificate will be added.
Enlarged master links at the beginning, in segment distances and at the end allow the users to lift up, to lower or lock the pump chain in steps.

Additional to standard design, customer-made variations are possible:
- two legged system with “Y” for pumps equipped with 2 eye screws
- alternative end fittings, like eye hooks, joining links or shackles
- available with additional stabilization chain
- variational of standard segment length, also in different sections possible
- special constructions
- stainless steel hoist chains for pump stations by request

For joining pumps and chains, we suggest safety shackles type SMSWI (page 18).

When ordering, please request desired total length of chain or number of segments and specify the kind of endfitting (for example master link). Total length conforms a multiple of segment length plus pitch of end fitting



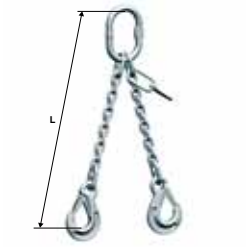
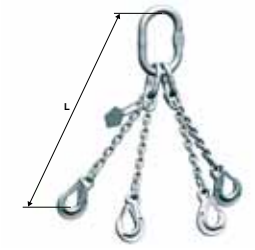
Type [mm]	WLL [kg]	Master link	Dimensions [mm]	Transition link	Dimensions [mm]	Chain type	SL* Number of links	Segment length L* [mm]	Length of master links/end links [mm]	Weight SL [kg]
PCWI 4	320	AWI 8	8x60x35	BWI 5	5x26x13	WOX 4x16	55	992	60	0,42
PCWI 5	500	AWI 10	10x80x50	BWI 7	7x36x16	WOX 5x16	53	1000	80	0,68
PCWI 6	750	AWI 13	13x110x60	BWI 7	7x36x16	WOX 6x18	45	992	110	1,05
PCWI 7	1000	AWI 13	13x110x60	BWI 9	9x44x20	WOX 7x21	37	975	110	1,33
PCWI 8	1250	AWI 16	17x110x60	BWI 10	10x44x20	WOX 8x24	33	990	110	1,83
PCWI 10	2000	AWI 18	19x135x75	BWI 13	13x54x25	WOX 10x30	25	993	135	2,91
PCWI 13	3200	AWI 22	23x160x90	BWI 16	17x70x34	WOX 13x39	17	963	160	4,84
PCWI 16	5000	AWI 26	27x180x100	BWI 20	20x85x40	WOX 16x48	13	974	180	7,38

* SL consisting of 1AWI/2BWI/WOX/links in standart length of 1000 mm

Application picture

pewag winner inox stainless steel chain slings and endless chains in welded system

Pictured chain slings and endless chains show
a summary of different possibilities of the welded system
On demand different variations can be supplied

Variation of end fittings Base on top: master link, respectively enlarged master link assembly	Diameter d [mm]	WLL 0–45° [kg]	WLL 45–60° [kg]	Eye sling hook HSWI	Master link AWI	Transition link BWI	additional possibility of shortening VLWI	Shackle SMSWI
1-leg chain sling								
	4	320	-	-	AWI 8	BWI 6	-	SMSWI 4/5
	5	500	-	HSWI 5	AWI 10	BWI 7	VLWI 5/6	SMSWI 4/5
	6	750	-	-	AWI 13	BWI 7	VLWI 5/6	SMSWI 6/7/8
	7	1.000	-	HSWI 7	AWI 13	BWI 9	VLWI 7/8	SMSWI 6/7/8
	8	1.250	-	-	AWI 16	BWI 10	VLWI 7/8	SMSWI 6/7/8
	10	2.000	-	HSWI 10	AWI 18	BWI 13	VLWI 10	SMSWI 10
	13	3.200	-	HSWI 13	AWI 22	BWI 16	VLWI 13	SMSWI 13
	16	5.000	-	HSWI 16	AWI 26	BWI 20	VLWI 16	SMSWI 16
2-leg chain sling								
	4	-	450/320	-	AWI 8	BWI 6	-	SMSWI 4/5
	5	-	700/500	HSWI 5	AWI 10	BWI 7	VLWI 5/6	SMSWI 4/5
	6	-	1.000/750	-	AWI 13	BWI 7	VLWI 5/6	SMSWI 6/7/8
	7	-	1.400/1.000	HSWI 7	AWI 13	BWI 9	VLWI 7/8	SMSWI 6/7/8
	8	-	1.700/1.250	-	AWI 16	BWI 10	VLWI 7/8	SMSWI 6/7/8
	10	-	2.800/2.000	HSWI 10	AWI 18	BWI 13	VLWI 10	SMSWI 10
	13	-	4.500/3.200	HSWI 13	AWI 22	BWI 16	VLWI 13	SMSWI 13
	16	-	6.300/4.500	HSWI 16	AWI 26	BWI 20	VLWI 16	SMSWI 16
3-leg chain sling								
	4	-	670/475	-	AWI 8	BWI 6	-	SMSWI 4/5
	5	-	1.050/750	HSWI 5	AWI 10	BWI 7	VLWI 5/6	SMSWI 4/5
	6	-	1.600/1.120	-	AWI 13	BWI 7	VLWI 5/6	SMSWI 6/7/8
	7	-	2.100/1.500	HSWI 7	AWI 13	BWI 9	VLWI 7/8	SMSWI 6/7/8
	8	-	2.650/1.800	-	AWI 16	BWI 10	VLWI 7/8	SMSWI 6/7/8
	10	-	4.250/3.000	HSWI 10	AWI 18	BWI 13	VLWI 10	SMSWI 10
	13	-	6.700/4.750	HSWI 13	AWI 22	BWI 16	VLWI 13	SMSWI 13
	16	-	10.000/7.500	HSWI 16	AWI 26	BWI 20	VLWI 16	SMSWI 16
4-leg chain sling								
	4	-	670/475	-	AWI 8	BWI 6	-	SMSWI 4/5
	5	-	1.050/750	HSWI 5	AWI 10	BWI 7	VLWI 5/6	SMSWI 4/5
	6	-	1.600/1.120	-	AWI 13	BWI 7	VLWI 5/6	SMSWI 6/7/8
	7	-	2.100/1.500	HSWI 7	AWI 13	BWI 9	VLWI 7/8	SMSWI 6/7/8
	8	-	2.650/1.800	-	AWI 16	BWI 10	VLWI 7/8	SMSWI 6/7/8
	10	-	4.250/3.000	HSWI 10	AWI 18	BWI 13	VLWI 10	SMSWI 10
	13	-	6.700/4.750	HSWI 13	AWI 22	BWI 16	VLWI 13	SMSWI 13
	16	-	10.000/7.500	HSWI 16	AWI 26	BWI 20	VLWI 16	SMSWI 16

Chain slings assembled with Connex CWI connectors are additionally possible in self- construction by technical experts

As top end fittings for welded chain slings, basis version is master link respective enlarged master link assembly. Bottom ends, customer can choose between eye hook HSWI, master link AWI, transition link BWI or shackle SMSWI.

HSWI Eye sling hook	AWI Master link	BWI Transition link	VLWI Shortener	SMSWI Shackle

Application instructions for shortening

correct application

wrong application

Basically chain slings and endless chains in welded system are serialized with identification tag and a test certificate will be added.

	Code	Diameter d [mm]	WLL laced [kg]
SWI Endless chain			
Stainless steel endless chains, electrically welded with same link dimension like the chain, 100 % tested.			
	SWI 4	4	512
	SWI 5	5	800
	SWI 6	6	1.200
	SWI 7	7	1.600
	SWI 8	8	2.000
	SWI 10	10	3.200
	SWI 13	13	5.120
	SWI 16	16	10.000

Usable length (extended length) to customer specification

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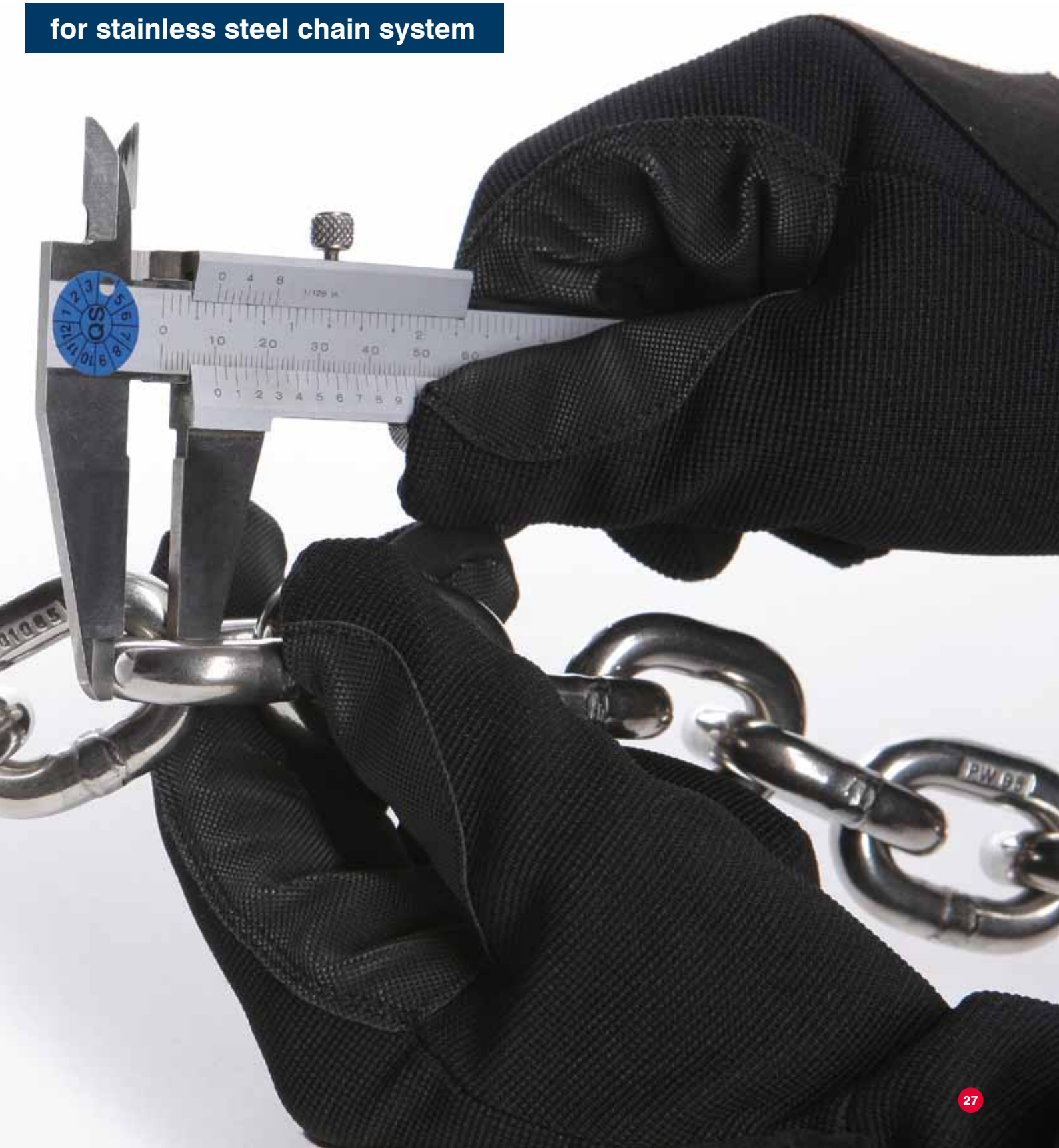
Resistance table 31

User manual

for stainless steel chain system



User manual

Information for use, storage and maintenance of pewag winner inox chain slings

General

pewag winner inox lifting accessories can be used for general lifting purposes covering a wide range of designs, loads and slings. Detailed information of all chain, components and chain slings are given in this catalogue and follow the Uniformed Load Method of Rating as standard. In addition, there is also an alternative method of rating the capacity of chain slings (Trigonmetric Method). This method should only be used where the weight and distribution of the load and the angles of the chain sling legs are known, and when the lift has been carefully planned and is supervised by a competent person. In such applications please contact our technical department, as the information given in this catalogue does not include details on chain sling rating using this alternative method of rating!

Chain slings shall be used only by trained personnel. If properly used, pewag winner inox chain slings have a long service life and offer a high degree of safety. Personal injury and damage to property can only be prevented by proper use. It is therefore highly important that you read and understand this user information and act in a responsible and forward-thinking manner when using lifting equipment.

Limitations on use

When modifying or repairing pewag winner inox chain slings use only pewag supplied original parts (e.g. bolts, safety pins, screws, etc.). The shape of the slings must not be modified – e.g. by bending, grinding, separating individual parts, drilling, etc. Avoid heating of the chains to more than 700°C. Do not remove any safety components, such as safety latches, safety pins, etc. Do not apply any surface coatings to pewag winner inox chain slings, i.e. do not subject them to hot galvanizing or electrogalvanizing. Dipping or removing the coating with chemicals is also dangerous and must be agreed upon by pewag. If required please contact our technical department who will be pleased to provide information.

Restrictions of use

due to hazardous or dangerous conditions (see table on page 13 of catalogue)

Temperature
The reduction of load capacity caused by high temperatures, as stated on page 13, ceases once the chain and/or lifting component reaches room temperature again. pewag winner inox lifting accessories must not be used outside the stated temperature range. In the event of temperatures outside this range, do not use the chain slings, and remove from service..

Acids, caustics and chemicals
Do not subject pewag winner inox lifting accessories to acid or caustic solutions or in acid or caustic-laden atmospheres. Important: Certain production procedures release acids and/or fumes. Use of pewag winner inox lifting accessories in highly concentrated chemicals in combination with high temperatures is only allowed upon explicit prior approval.

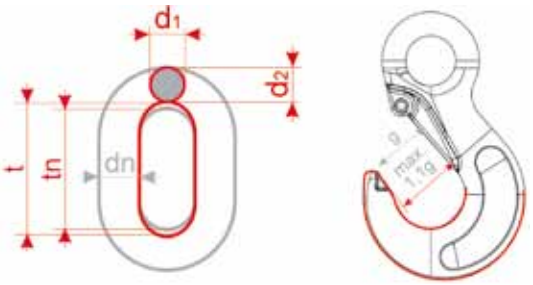
Working load limit
The working load limits in this catalogue and those on the chain sling have been determined on the basis that the loading of the chain sling is symmetrical and there are no particularly hazardous conditions. Such hazardous conditions would be offshore applications, the lifting of people and potentially dangerous loads, such as liquid metals, corrosive or caustic substances or nuclear material. If the chain sling is to be used for such purposes, the extent of the risk is to be assessed by an expert and the safe working load be adjusted accordingly (see page 13 for recomendations).

Inspections and tests
Before using any lifting equipment for the first time, it should be ensured that:
- The chain sling corresponds exactly to the order;
- The inspection certificate or certificate of conformity has been supplied;
- Marking and load capacity stated on the chain correspond to the information given on the inspection certificate or certificate of conformity;
- All particularities of the chain sling have been entered into a register of lifting equipment, if required;
- Instructions for the proper use of chain slings has been supplied, read and understood by personnel.

Check the chain slings before each use for visible damage or signs of wear. In case of doubt or damage do not use the chain slings and have them inspected by a competent person.

After extraordinary, events that could cause impairment of the chain sling, the chain sling must be checked by an expert (e.g. after exposure to uncontrolled heat). As per EN818 we recommend subjecting the chain sling every two years to a load test with 1.5 times the load capacity, followed by a visual inspection, or another type of crack test (fluxing).

Elimination criteria following visual inspection
- Broken part
- Missing or illegible marking of the chain sling, i.e. identification data and/or load capacity data
- Deformation of suspension or sling parts or the chain itself
- Elongation of the chain. The chain must be discarded if $t > 1{,}05\ t_n$
- Wear is determined as the mean value of two measurements of diameters d1 and d2 carried out at a right angle (see picture). The chain must be discarded if $dm = \frac{d_1 + d_2}{2} < 0{,}9\ d_n$



- Cuts, notches, grooves, surface cracks, excessive corrosion, discoloration due to heat, signs of subsequent welding, bent or twisted links or other flaws.
- when wear a chemical abrasion (example pitting) or a permissable wear tolerance has been reached per the table attached.
- Cracks: Chains with cross-cracks that are visible to the naked eye must be discarded.
- Missing or non-functional safety device (safety latches if fitted) as well as signs of widening or twisting of hooks, i.e. noticeable enlargement of the opening or other forms of deformation. The enlargement of the opening must not exceed 10 % of the nominal value. A jumped out safety catch shows an overload of the hook.

Maximum approved dimensional change:

Designation	Dimensions	Admissible deviation
Chain	dm	-10%
	t	+5%
Links	d	-10%
	t	+10%
Hooks	e	+5%
	d2 and h	-10%
	g	+10%
CWI	halves loose	no changing admissible
	e	+5%
	c	-10%
Shackles	Bolzen beweglich	no changing admissible
	e	+5%
	d, d1, d2 und M	-10%
Connex bolt	d	-10%

Repair
pewag winner inox lifting accessories and chain slings should only be repaired by qualified personnel using genuine pewag parts.

Documentation
Records of inspections, and in particular their findings, as well as details of repairs carried out must be kept on file during the entire service life the chain sling.

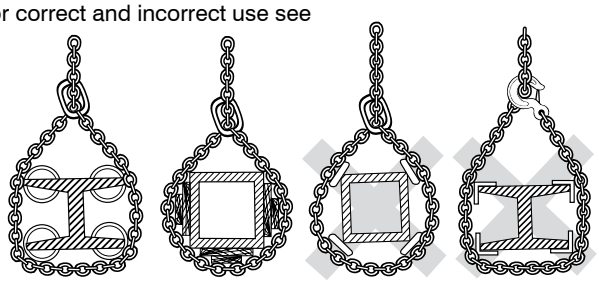
Storage
pewag winner inox sling chains should be stored in cleaned and dried condition and protected from corrosion, e.g. lubricate stainless.

Correct use of pewag winner inox chain slings

Angle of inclination – sling points
Select slinging points and chain type in such a way that the angles of inclination of all chain strands (legs) lie within the data given on the identification tag. All angles of inclination should preferably be the same. Avoid angles of inclination of less than 15°, because of the high risk of load instability. Never use chain slings with the angle of inclination exceeding 60°.

Edge load – protection of load and chain
The maximum load capacity of pewag winner inox chain slings was defined under the assumption that the individual chain legs are pulled straight under load, i.e. that they do not run over edges. In the case of edge loading, load protection (packing) should to be used to avoid damage.

For correct and incorrect use see



If chains are guided over edges without proper protection, their load capacity is reduced. For the corresponding load factors please refer to the table on page 13. But if chains looped around a beam or other round shaped loads the diameter should be minimum 3 times the chain pitch. For smaller diameters the WLL of the chains must be reduced by 50%.

Impact
The maximum load capacity of pewag winner inox chain slings are defined under the assumption that the load on the individual chain strands (legs) is applied without any impact or shock loading. In cases of possible impact/shock, the load factors on page 10 must be taken into consideration.

Impact/shock is defined as follows:
- Slight impact: created, for example, when accelerating the lifting or lowering movement
- Medium impact: created, for example, when the chain slips when adjusting to the shape of the load
- Strong impact: created, for example, when the load falls into the unloaded chain

Vibrations
pewag winner inox lifting chains and components are approved dimensioned for 20.000 cycles. In case of high dynamic stress there is a risk of damage. According to the „Berufsgenossenschaft Metall Nord Süd“ the stress at load capacity limit can be reduced by using higher dimensioned chains and components.

Symmetrical loading
The load capacities of pewag winner inox chain slings are defined with the assumption that the load of the individual chain strands (legs) is symmetrically distributed. Lifting of the load then leads to identical angles of inclination, and the individual strands (legs) are symmetrical to each other.

The load can still be considered symmetrical when the following conditions are met:

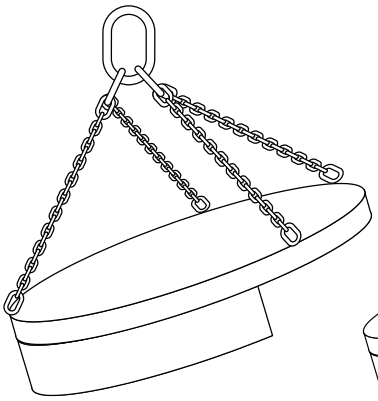
- The load is smaller than 80 % of the stated load capacity (WLL).
- The chain sling leg angles to the vertial are all not less than 15°.
- The angles to the vertical of all chain legs are identical or deviate max. 15° from each other.
- In the case of three and four strand sling chains, the corresponding plan angles are within 15° of each other.

Example of asymmetry

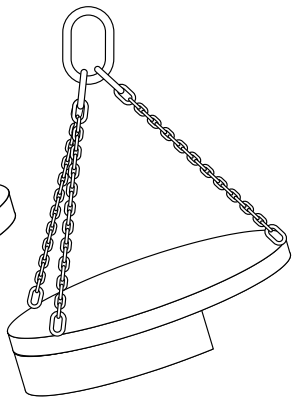
If all of the listed parameters are not met, load is considered to be asymmetric and an expert must be called in to assess the lifting process. In case of doubt, only one chain strand (leg) should be considered as load-bearing. For the corresponding load capacity please refer to the load capacity table.

Use of pewag winner inox chain slings for other than the intended purposes

Use chain slings only for the intended purpose. In cases where not all individual strands (legs) are used simultaneously or where several chain slings are used at the same time, please refer to the load capacity table to find out the load capacity.



The majority of the load is carried by 1 strand (leg)



The majority of the load is carried by 2 strand (leg)

In case of doubt or as an alternative, change the load capacity according to the following table.

Type of chain sling	Number of individual strands used	Use factor in relation to the load capacity given on the tag.
two-stranded (2-leg)	1	1/2
tree- and four-stranded (3/4 leg)	2	2/3
tree- and four-stranded (3/4 leg)	1	1/3
2x single stranded (single leg)	2	1,4 up to 0°–45°
2x two-stranded (2 leg)	3 or 4	1,5 up to 0°–45° and 45°–60°

Hang any individual strands (leg) that you do not use, back into the master link to prevent hazards caused by freely swinging chains or unintended hooking.

Before using several chain slings at the same time, make sure that the crane hook is big enough for all the master rings. Make sure that the master rings cannot fall out of the hook during lifting. No angles of inclination of more than 45° allowed. Use only chain slings of the same nominal thickness and grade at the same time.

Detailed user manual available for download on www.pewag.com

Resistance

Values for resistance in different media

Material no.	DIN-shortname	Cr %	Ni %	Mo %	Ti
1.4571 (AISI 316 Ti)	X6 CrNiMoTi 17 12 2	16,5 - 18,5	10,5 - 13,5	2,0 - 2,5	Addition
1.4404 (AISI 316 L)	X2 CrNiMo 18 10	16,0 - 18,0	10,0 - 13,0	2,0 - 2,5	-

Corroding media	Concentration %	Temperature °C	Resistance
Atmosph. corrosion*			0
Benzine		20 / boiling	0
Formic - acid HCOOH	10-50 80	20 boiling 20 boiling	0 1 0 3
Ammonia NH4OH		20 / boiling	0
Ammoniumnitrat NH4NO3	hydrous, cold saturated solvent	20 / boiling	0
Chloride	hydrous solvent	20	1-3 P
Acetit-acid CH3COOH	10 10-50 80	20 boiling boiling	0 0 1 P
Fatty-acid (oil)		150	0
Hydrofluoric acid	10 40	20 20	2 P 3
Tannic-acid	50	20 / boiling	0
Potassium hydroxide KOH	hot saturated	120	1 S
Lime milk Ca(OH)2 (Calciumhydroxid)		20 / boiling	0
Seawater		20 boiling	0 P 1
Phosphor-acid H3PO4	1 50 80 concentrated	20 boiling boiling boiling	0 1 2 3

Corroding media	Concentration %	Temperature °C	Resistance
Nitric acid HNO3	1-90 50	20 boiling	0 1
Hydrochloric acid HCl	0,2-0,5 1 2	20 50 20 50 20-50	0 P 1 P 0 P 1 P 1 P
Sulfuric acid H2SO4	0,1 1 5 10	boiling 20 80 boiling 20 50 boiling 20 50 80 boiling	0 0 1 1 0 1 2 0 1 2 2
Trichlorethylene CHCI:CCl2		20 / boiling	0 P

* The complete resistance depends on kind, composition and the water-content of the atmosphere and is in industrial areas and near the coast considerably less than in the highlands or in dry regions.

0 = completely resistent
1 = practically resistent
2 = little resistent
3 = theoretically non-resistent
P = pitting
S = stress corrosion

A mesurement for corrosion - constant corrosion over the complet space is required - results from the weight - difference of the mat. after a certain time, weight before and after the corrosion. The loss of weight will be shown in gramm/m² and hour. This figure approx. corresp. the denutation mm/year.

Exact compulsary details only after corresp. tests for exact defined corrosion causing chemicals without pollusion.

Used in:
Food-sector (dairy, slaughtery etc.) chemical industrie and in many fields of lifting, conveying and securing.

	g/m²h
0 corresp. to a weight-loss up to	0,1
1 corresp. to a weight-loss from	0,1 - 1,0
2 corresp. to a weight-loss from	1,0 - 10,0
3 corresp. to a weight-loss over	10,0
completely non-resistaned	-

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